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RECORD OF ORAL HEARING
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RAJENDRA KASHINATH SINGH
and YE-GANG LIN

Appeal 2008-0508
Application 10/604,166
Technology Center 1700

Oral Hearing Held: March 13, 2008

Before CATHERINE Q. TIMM, LINDA M. GAUDETTE, and
MICHAEL P. COLAIANNI, Administrative Patent Judges

ON BEHALF OF THE APPELLANT:

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1 THE CLERK: Calendar number 41, Mrs. Larson.

2 JUDGE TIMM: If you would please state and spell your full
3 name for the court reporter. Oh, excellent.

4 MS. LARSON: The same question was asked Tuesday, and
5 this time I had this --

6 JUDGE TIMM: Well, as you know, you have 20 minutes to
7 present your case, and you may start when you're ready.

8 MS. LARSON: Okay. One of the things that we've gotten to in
9 polymers right now is just that there's a whole lot of polymers out there, and
10 when we try to apply them in different combinations, we need different
11 specific combinations. And every time you put in an additive to improve
12 one thing, two more go to pot.

13 And I think the argument has rather progressed that what we're
14 seeing, particularly in polycarbonates, is that we're looking now at pretty
15 specific combinations, and this is a fairly specific combination.

16 It's base-catalyzed polycarbonate, which means that if you don't
17 do anything else, it has residual base. It has an acidic quencher added in a
18 specific mole ratio, and it has a two-component fire retardant. None of those
19 taken individually are new. The examiner's art is fairly good in the first
20 obviousness rejection. It's kind of out there on the second one.

21 But you need to look at the limitations on the amounts and the
22 combination. In this case we have an enablement issue, which I think sort of
23 ties in to the anticipation and obviousness issue. The enablement issue
24 comes in two parts.

25 JUDGE TIMM: Well, you know, I -- you probably don't have
26 to focus too much on the enablement issue.

1 MS. LARSON: Okay.

2 JUDGE TIMM: If you want to spend more time on the
3 anticipation and obviousness issue.

4 MS. LARSON: Okay. In the case of anticipation, Rosenquist
5 is obviously polycarbonate and the same flame retardant package. It doesn't
6 say how the polycarbonate was made specifically and it doesn't mention a
7 quencher. Given the absence of those disclosures, I don't see how we have
8 anticipation at all.

9 JUDGE TIMM: Well, there is a mention in column 2 in the
10 first paragraph of the Sakashita reference, which does teach the base-
11 catalyzed.

12 MS. LARSON: Well, right, but that's only one way to make
13 polycarbonate, and we don't know if that's the way that it was made in
14 Rosenquist.

15 JUDGE TIMM: Do we know -- Rosenquist doesn't, in their
16 example, specify which process was used to --

17 MS. LARSON: That's right.

18 JUDGE TIMM: -- make this polycarbonates. Does GE know
19 which processes were used?

20 MS. LARSON: No. I think I even wrote Rosenquist, and at the
21 time it wasn't really considered important, and I think when we went back
22 and looked, the answer was no. We did not know. If we had known, I
23 would have told you and said, Yep, okay. It was, and -- but then I would
24 have also known that it wasn't quenched.

25 In other words, if it was -- if it was base-catalyzed, I would
26 have looked to see if it had been quenched, and we couldn't find out what --

1 how it was done. Sometimes these disclosure letters snake through the
2 system for quite a while.

3 In any event, what the inventors here found was not only that
4 you needed a quencher, but you needed it in a fairly narrow -- in a range of
5 quencher amounts.

6 That if you put in too much, you started losing flame retardancy
7 again, which was kind of a strange finding, because you would think, Okay,
8 well, if I didn't have enough, I might have residual base and it might be
9 doing something to my flame retardants.

10 Though usually the reason we worry about quenching base is to
11 prevent discoloration when you mold the product. The base causes the
12 polycarbonate to break down and turn it yellow, which is not really popular
13 in most people's polycarbonate windows, for example. If you want a clear
14 product, you don't want it to change color on you.

15 Here the problem is keeping the flame retardants up with this
16 package and keeping it very, very clear for the particular end use that these
17 products are looking at. And it was -- I think the inventors found it
18 surprising that you couldn't just dump in enough quencher.

19 If you put in too much, you started to have a problem, too, and
20 that's why we have an upper range as well as a lower range. It's not just an
21 at least.

22 JUDGE TIMM: Is that range different than what's in, for
23 instance, the Sakashita reference?

24 MS. LARSON: I don't -- I think it is different. I think when
25 you're dealing with worrying about color, you don't have a top end.

26 JUDGE TIMM: In Sakashita, in column 8, there is a paragraph

1 which states that -- it would be starting at line 17, which says, "For example,
2 the acid compounds are used in the amount of .01 to 500 moles," and then
3 there is a preferable range going all the down to .5 to 30 moles based on one
4 mole of the alkaline compound remaining in the polycarbonate.

5 Would that -- in your claim you're talking about a ratio with
6 regard to the initial basic catalyst.

7 MS. LARSON: Right.

8 JUDGE TIMM: Would that range be different than your range?

9 MS. LARSON: I think they may overlap. But I think there's
10 also -- it goes above our range.

11 JUDGE TIMM: Well, if you --

12 MS. LARSON: I'm not sure how you calculate how much base
13 is left in the final product to start with.

14 JUDGE TIMM: Theoretically, it should be the same. If it's a
15 catalyst, it's not being used up in the process.

16 MS. LARSON: Yeah, but there's so many other components in
17 there, and it gets -- you know, there's -- when you get done doing it, I have
18 no idea how much is left that does -- yes. Theoretically, in a perfect world,
19 but it isn't -- there isn't that much -- it isn't all left.

20 I mean, when they started talking, they said you've go to do it in
21 terms of initial base because we have no way to calculate how much base is
22 left in a -- in the final end product because it does get consumed to some
23 extent when other materials are added.

24 JUDGE TIMM: Well, then that brings up the question of how
25 would they have calculated it in Sakashita.

26 MS. LARSON: I don't know if they did.

1 (Pause in the proceedings.)

2 MS. LARSON: That's 613?

3 JUDGE TIMM: That is 5606007.

4 MS. LARSON: Sometimes I think carrying the paper would be
5 lighter than carrying this computer.

6 Right. If you look at their range, their top range is up to 500
7 moles, so even if we assume they're equal, our top range is 30.

8 JUDGE TIMM: They do have a --

9 MS. LARSON: And they do have a 30. I appreciate that --

10 JUDGE TIMM: Yes.

11 MS. LARSON: -- but they have no appreciation for the
12 criticality of the 30, and I don't know if this even carries over with other fire
13 retardants.

14 I know that for this combination of fire retardants which we're
15 claiming, what hap -- if you have too much base, you start ad -- or quencher
16 added. The acid does something to the fire retardant apparently, and you
17 start losing fire retardants.

18 And that's what we show in our data and that something -- you
19 know, it hasn't -- as far as I know, it hasn't been reported before that this
20 particular package is acid sensitive, and therefore, to keep both the very high
21 clarity and the fire retardants, we needed to very carefully quench out both --
22 quench some -- base out, but not too firmly.

23 And if we don't -- if we get outside that range, and that's why
24 we put the range in there, and it's, as I said, a fairly narrow claim.

25 And so really the issue is -- is, you know, there's all these -- no
26 question. All these pieces are out there, but there's so many different ways

1 to put them together, and what the scientist at places like -- actually, it's not
2 GE anymore. I should mention that. It's now Sabic Innovative Plastics. GE
3 spun off this division.

4 What they're doing is trying to find ways to take these materials
5 and make them work for certain applications, and you just don't go and say,
6 Oh, I need a plastic that's fire retardant and really clear and meets this, that
7 and the other thing and pull it off the shelf. You have to go and mix and
8 test.

9 And until you have tested, you don't know what you have, and
10 unfortunately, us patent attorneys are really good at writing very broad
11 specifications in terms of disclosures, which means we have huge laundry
12 lists of material, and I assume the Rosenquist reference is the real issue.

13 My thought on the Mark reference is under the proposed IDS
14 rules, I probably wouldn't even cite it, given the --

15 JUDGE TIMM: Yeah. I think we can concentrate on
16 Rosenquist and Sakashita.

17 Now, with regard to what you're saying -- you're showing with
18 regard to your arguments with evidence of -- is commensurate in scope with
19 the claims; I assume that's in reference to the data you present in your
20 specification and your tables.

21 MS. LARSON: Yes, it is. Basically, our feeling is -- is we
22 have two acids, but they're very different. There's a Lewis acid and
23 Bronsted acid, so I think that's representative of acid, and he makes a
24 comment, Well, would an amine catalyst be different?

25 Well, to the extent an amine is a base, it's because it makes
26 hydroxide, and while he keeps talking about sodium as the ratio -- probably

1 should have said sodium hydroxide in the tables -- the result is that we have,
2 you know, a base -- the hydroxide is the business side of the base once it's in
3 the -- in there.

4 The amine is basic because it creates hydro -- effectively
5 creates ammonium hydroxide if there's water present, and so it can receive
6 that proton too, just the same way that the OH can, and that's effectively -- I
7 think that there's no argument in there as to why they're not representative.

8 It's a count the examples and say, Oh, you haven't given me
9 enough, instead of telling me, What more do I need? Why aren't these
10 enough?

11 And I think the case law has pretty clearly said this that, you
12 know, it seems that a large part of his objection to the sufficiency, if you
13 read between the lines, to the sufficiency of the examples has to do -- is
14 related back to the enablement rejection where he wants the generic claim to
15 say, This much of this or this much of this or this much of this, instead of
16 allowing us to have that range that encompasses both of the specific
17 embodiments.

18 At one point he argues that, Well, you have -- it's on page 11 of
19 the office action. He says -- shows that two acidic quenchers in the sodium
20 salt of claim 2 would have probative value, but the examiner disagrees since
21 table -- batch 2 of table 1 shows that this particular ratio falls outside the -- it
22 doesn't have the right clarity or the right fire retardants.

23 Similar logic is applied to phosphorus; thus more showing
24 would be needed in the broadly recited claim language and narrow and/or
25 confusing showings does not overcome the rejection. In other words, he's
26 discounting our showing of unexpected results because they're not all within

1 exactly the same concentration range.

2 JUDGE TIMM: Well, you do have to show criticality for your
3 --

4 MS. LARSON: Well, that's right, but we -- you know, there
5 may be some other acids that you could go higher with. We're prepared to
6 take what we've got and the range we have because there's just -- once you
7 have something, it's hard to justify the cost and expense of going out and
8 testing six more acids when these are the two we're most likely to use.

9 So from the perspectives -- and similarly with the base, I don't
10 know -- if he had said why he thought an amine might be different instead of
11 just it is different. It's a different compound, but it's still a base. There's no
12 apparent reason why it would function differently from some other base. It
13 would still neutralize acid.

14 So I don't understand why -- you know, it might take a little
15 more because it's not quite as strong a base, but there is no explanation that
16 gives me a basis to go forward and present argument and evidence that he's
17 wrong other than saying a base is a base in this context because it neutralizes
18 the acid.

19 JUDGE TIMM: Moving on, in your specification anywhere, do
20 you denominate these particular results as unexpected results?

21 MS. LARSON: Yes. In the detailed description.

22 "The present invention is based on several surprising
23 observations. First, it was observed by the inventors that polycarbonate
24 produced via a base-catalyzed, for example, sodium hydroxide-catalyzed,
25 melt polymerization has a significantly higher solubility for perfluoroalkane
26 sulfonates without loss of transparency."

1 "Secondly, the flame retardancy of the perfluoroalkane
2 sulfonate was significantly improved by the presence of residual base
3 catalyst. Furthermore, it appears that there is an optimum range of residual
4 base catalyst that allows enhancement of flame performance."

5 And I have the published spec here. It's in paragraph 9. That's
6 the second paragraph of the detailed description, and then we finish with,
7 "Excessive base catalyst can result in the decay of flame performance."

8 JUDGE TIMM: Now, you said earlier that haze and flame
9 retardancy are both things that these of ordinary skill in the art are interested
10 in --

11 MS. LARSON: Absolutely.

12 JUDGE TIMM: -- in terms of optimizing.

13 MS. LARSON: Low haze. That is, maximum clarity in
14 products that you want to be clear and flame retardants because
15 polycarbonate without flame retardant burns like a bandit, and it drips and it
16 catches anything else on fire that's around it.

17 It's amazing how well polycarbonate will burn if it's in a thin
18 piece if it doesn't have flame retardants in it, and so that's become -- you
19 know, flame retardancy in polycarbonate is a major issue if you're using it
20 for anything that's structural. Obviously it's not a problem in water bottles.

21 JUDGE TIMM: Well, given that and the fact that it is known
22 to melt polymerize with a base catalyst and quench with an acid and you are
23 interested in minimizing haze and getting flame retardancy, is there a
24 difference between the claim and the prior art in terms of the concentrations
25 of these additives that you're using?

26 MS. LARSON: No. It's the particular combination. It's getting

1 within this -- enough that is some excess of base, but not too much. It's this
2 particular fire retardant package because we don't really know if it's going to
3 work for the others, whether the effect comes, but this is a very effective
4 flame retardant package for maintaining transparency.

5 It's also the fact that when we start with base-catalyzed
6 material, we're able to get much -- we're getting better solubility of the flame
7 retardants -- of the flame retardant package, so we're able to get it in without
8 losing haze -- without creating haze.

9 So those three factors come together when we put it all in there
10 that we can make a good package better without lo -- but that there is this
11 critical range.

12 JUDGE TIMM: I'm taking a look at Rosenquist at table 2A in
13 the fifth column of results that are listed there, and for instance, it's got a V0
14 rating for a 75-mil product that's .9802.

15 MS. LARSON: Okay. Rosenquist uses a -- it's not a V0 rating.
16 It's a PFT. It's kind of a probability of getting a V0 rating. The V system is
17 kind of crude in that you get a V0 or you get a V1 and report it later down
18 the road. V0, you don't know whether it was a robust V0 or by-the-skin-of-
19 its-teeth V0.

20 So the PFT rating we were hoping would become a numerical
21 way of taking and applying a little more statistical weight to it so that when
22 you made a small change, you could see it because -- of course, one of the
23 problems with the V0 rating is that if you have -- it's very dependent on the
24 thickness of the material.

25 Just as when you're starting a fire, you don't start it with a log.
26 You start it with something thin. A thin piece is much more susceptible to

1 ignition than a thick piece.

2 So when we look at the thickness if it's V0, if it's a robust V0,
3 we might be able to go thinner. If it's a barely V0, we couldn't go thinner
4 and expect it to hold that performance. So we were trying to -- that was
5 trying to present a statistical value that would allow us to compare things
6 within the V0 area.

7 So something above .9 is acceptable at that thickness. It will be
8 V0 almost all the time. Not every sample behaves exactly the same, and
9 that's why to get the V0 rating is based on either five or ten tests.

10 JUDGE TIMM: And you're trying to approach one; is that
11 correct?

12 MS. LARSON: You're trying to approach one in that case,
13 right, and so 90 -- 90 percent likelihood of making V0's pretty good. 90 --
14 you know, .98, .99 is even better.

15 JUDGE TIMM: Is the V0 related to the drips?

16 MS. LARSON: It's a combin -- it's a very complicated formula
17 that ASTM cooked up that has to do with drips and ignition time and
18 whether it's self-extinguishing, that is, whether it fizzles on its own. So it's a
19 combination of all of the raw data munged into this number.

20 And if you get more than this that failed drips or more than this
21 number of drips on any one, than that comes out as a V1 rather than a V0,
22 and then they -- and it's -- it's at nice measure.

23 It's the measure that everybody uses to say you're good enough
24 to be in the marketplace, but it's not, in the grand scheme of things, a very
25 quantitative value.

26 JUDGE TIMM: Well, coming back to the column 5 data where

1 you have the KPFBS in the .07 range, concentration, and the siloxane and
2 the .05 and then you have a V0 that's -- or the probability is close to one for
3 the V0 and you have a haze percent that's less than one.

4 How would that data compare to what -- what's the difference
5 between that compound other than the fact that we don't know whether it's
6 made by melt polymerization with the base catalyst and quenching? What
7 would your analysis of that data be in terms of your claimed properties?

8 MS. LARSON: Basically, that we don't know. That -- you
9 know, I don't have any information about the sp -- any more information
10 about the specifics of that compound. I have asked. And I went back and I
11 looked at my original files on that patent to see if I had any more and I don't.

12 GE makes polycarbonate by several different methods, and so
13 it's -- you know, they use interfacial. It doesn't even have to be -- for melt, it
14 doesn't even have to be base-catalyzed. There are acid-catalyzed
15 procedures, too, and I don't know how much -- you know, what this was.
16 We said Lexan and the notebooks weren't very clear.

17 JUDGE TIMM: So Lexan can be made by different processes?

18 MS. LARSON: Right. Lexan is just the trade name, which is
19 why, I guess, they're always giving us those rejections about using trade
20 names. And it could have even been made by interfacial, which is the way it
21 was made in Mark.

22 And if you compare the two here that actually are the closest in
23 total composition to ours, which is the last two columns there, to our specific
24 examples there on either side of one, their haze is above one.

25 JUDGE TIMM: Now, in table 2B, though, you have two
26 examples where you have .07 and .08 of the sulfonate, and your haze is

1 below one in those. They have a slightly higher level of siloxane.

2 MS. LARSON: Right. I'm just saying is if I take the one that is
3 -- the ones that are closest to ours, their flanking, the ones that I can flank
4 closest to it have a higher haze, which leads me to suspect that if it was base-
5 catalyzed, it wasn't acid-quenched. That it didn't meet all the limitations, but
6 that's the best I can do at this point.

7 JUDGE TIMM: Did you want to address any of the dependant
8 claims?

9 MS. LARSON: I think those are pretty well gone over in the
10 brief. You know, we're talking about specific -- you know, in the dependent
11 claims, we're talking about specific numbers for specific quenchers, and, you
12 know, I don't see that there's any suggestion of those in the art.

13 You know, I think on the broader claims that there's no
14 suggestion that there's any criticality for the base addition with respect to fire
15 retardants since the concern in the art when you put in the base is really to
16 keep it from going yellow when you process it down the road.

17 JUDGE TIMM: And that would be related to haze values as
18 well, wouldn't it?

19 MS. LARSON: No. You can get an absolutely crystal-clear,
20 brilliantly yellow product. You can go from something that's water white to
21 something that's this color really easily.

22 But it's still absolutely clear. It doesn't create haze. It creates
23 nasty yellow stuff in there. Haze arises when you have loss of solubility or
24 little phase separations rather than color, which is fully solubilized nastiness.

25 And I've seen a series that they did in little Baggies. Actually,
26 they got some about -- up to about the color of this dark wood. If you have

1 the wrong stuff in there under exactly the same exclusion conditions.

2 A good one is absolutely crystal-clear and white, you know,
3 water white. And a bad one can get up to as dark as dark wood, and that's
4 obviously a real issue when you're making lots of polycarbonate because
5 very few people want dark brown polycarbonate. I guess it would be good
6 for beer bottles. A new invention?

7 JUDGE TIMM: Any more questions?

8 JUDGE COLAIANNI: No. No questions.

9 (Whereupon, the proceedings at 10:28 a.m. were concluded.)